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ABSTRACT

This document presents an outline for a 135-hour course designed to familiarize the student with operation, inspection, troubleshooting, and repair of aircraft landing gear, ice and rain control systems. It is designed to help the trainee master the knowledge and skills necessary to become an aviation airframe mechanic. The aviation airframe maintenance technicians must be able to demonstrate his ability to troubleshoot, service, and repair aircraft landing gear systems; his ability to troubleshoot, service, and repair aircraft brake systems; and his ability to inspect, check, service, and repair aircraft ice and rain control systems. The behavioral objectives and performance standards necessary for a person to become an airframe mechanic, or a combined airframe and powerplant mechanic with a Federal Aviation Agency license are specified. A four-item bibliography, a list of 10 filmstrips, and a Quinmester posttest sample are included. (KP)

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AVIATION MECHANICS 3 (Air Frame)
(Aircraft Landing Gear, Ice and Rain Control Systems)

Department 48 - Course 9067.02

DADE COUNTY PUBLIC SCHOOLS

DIVISION OF INSTRUCTION • 1971

ED 092689

D A D E C O U N T Y P U B L I C S C H O O L S

1 4 1 0 N O R T H E A S T S E C O N D A V E N U E

M I A M I, F L O R I D A 33132

Course Outline

AVIATION MECHANICS 3 (Air Frame)
(Aircraft Landing Gear, Ice and Rain Control Systems)

Department 48 - Course 9067.02

the division of

VOCATIONAL, TECHNICAL AND ADULT EDUCATION

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Miami, Florida 33132

Published by the Dade County School Board

Course Description

9067	48	9067.02	Aircraft Landing Gear, Ice and Rain Control Systems
State Category Number	County Dept. Number	County Course Number	Course Title

To familiarize the student with the operation, inspection, troubleshooting and repair of aircraft landing gear, ice and rain control systems.

Indicators of success: Successful completion of ALL quinmesters of the Aviation Mechanics (Airframe and Powerplant General) Course, Number 9073.

PREFACE

The course outline that follows has been prepared as a guide to help the trainee in the skills and knowledge necessary to become an Aviation Airframe Mechanic.

This is a course composed of knowledge and skills necessary should one decide to follow the Airframe Mechanic or combined Airframe and Powerplant Mechanic Curriculum, leading to a Federal Aviation Agency License.

Trainees desiring to follow this curriculum must first successfully complete the Basic Aviation Mechanic Curriculum which applies equally to both the Airframe and Powerplant License. This course is composed of two blocks of several units each requiring one quinmester of 135 hours of instruction. The several quinmesters of course 9065 must also be completed if the student desires to apply for his license examinations.

Great emphasis will be placed on the use of lecture, audio visual aids and instruction sheets of various types. Following the body of the course outline will be found a listing of the Behavioral Objectives which are to be met to earn satisfactory grades. Following each unit title will be found, in parentheses, several letters and numbers designating the time spent in terms of theory and shop work. AIT designates the estimated instructional time, P indicates the

time spent in theory or classroom work and L/S indicates the time spent in laboratory or shop work.

The level 1 following a unit denotes that the student must have knowledge of general principles but no practical application, nor manipulative skills. Instruction is given by lecture, demonstration and discussion. The level 2 following a unit denotes the student must have knowledge of general principles and limited practical application, adequate manipulative skill to perform basic operations. Instruction is given by lecture, demonstration, discussion and a limited amount of practical application. The level 3 following a unit denotes the student must have knowledge of general principles and performance of a high degree of practical application and sufficient manipulative skill to accomplish return-to-service operations. Instruction at this level is given by lecture, demonstration, discussion and a large amount of practical application.

This outline has been developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee and the Vocational Teacher Education Service, and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown

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GOALS

The aviation airframe maintenance technician must be able to demonstrate:

1. His ability to troubleshoot, service and repair aircraft landing gear systems.

2. His ability to troubleshoot, service and repair aircraft brake systems.

3. His ability to inspect, check, service and repair aircraft ice and rain control systems.

Course Outline

AVIATION MECHANICS 3 (Air Frame)
(Aircraft Landing Gear, Ice and Rain Control Systems)

Department 48 - Course 9067.02

I. AIRCRAFT LANDING GEAR SYSTEMS (117 hours)

A. Landing Gear Systems
(Level - 3) (EIT-58 hrs) (T-29 hrs) (L/S-29 hrs)
1. Retractable Landing Gear
a. Sequence of gear retraction
(1) Main gear
(2) Nose gear
b. Gear position indicators
c. Inspection of landing gear
(1) Inspection frequency
(2) Gear down-locking mechanism
(3) Gear up-locking mechanism
(4) Gear doors and fairing
(5) Gear warning system
(6) Lubrication of landing gear
(7) Operational check of landing gear
(8) Adjust locks and switches
2. Nose and Tail Wheel Steering and Damping
a. Steering mechanism
b. Shimmy damping mechanisms
3. Landing Gear Alignment
4. Bleed from Hydraulic Systems
5. Inspection, Servicing and Operation of Power Brakes and Emergency Brake Systems
a. Source of power for power brakes
(1) Normal operation of brakes
(2) Emergency operation of brakes
b. Brake deboosters
(1) Purpose
(2) Hydraulic principle of deboosters
c. Brake sub-system accumulator
d. Power brake control valves
(1) Purpose
(2) Design features

e. Shuttle valves
(1) Purpose
(2) Position during normal operation
(3) Action of shuttle valve during emergency operation
f. Brake fuses
g. Emergency air bottle

6. Cause of Brake Malfunctions
a. Malfunctions in the brake system
(1) Brake fading
(2) Excess pedal travel
(3) Grabbing brakes
(4) Spongy brakes
(5) Dragging brakes
(6) Creeping brake pedal
b. Corrective action to correct brake malfunctions
(1) Brake fading
(2) Excess pedal travel
(3) Grabbing brakes
(4) Spongy brakes
(5) Dragging brakes
(6) Creeping brake pedal

B. Landing Gear Components
(Level - 3) (EIT-59 hrs) (T-29 hrs) (L/S-30 hrs)

1. Clean and Store Aircraft Tires
a. Tire cleaning
b. Tire storage

2. Inspect, Demount, Repair and Reinstall Tires on Wheels
a. Jacking aircraft
b. Axle thread protection
c. Repair of tires and tubes
d. Installation of tires and tubes
e. Inflation of tires

3. Removal, Inspection, Service and Installation of a Wheel on an Axle
a. Jacking aircraft
b. Axle thread protection
c. Wheel bearing removal
d. Inspection of wheels
e. Pack wheel bearings
f. Install and safety wheel on axle

I. AIRCRAFT LANDING GEAR SYSTEMS (Contd.)

4. Mechanical and Hydraulic Type Brakes
   a. Comparison of systems
   b. Operating principles
   c. Brake servicing
   d. Types of brake
      (1) Single servo shoe
      (2) Dual servo shoe
      (3) Expander tube
      (4) Multiple disc
      (5) Single disc
5. Adjust Clearance on Brakes
   a. Dual servo shoe
   b. Single disc brakes
   c. Multiple disc brakes
6. Inspect, Overhaul and Operate a Master Cylinder
   a. Brake master cylinders
   b. Overhaul procedures
      (1) Seal removal
      (2) Protection of seals during installation
      (3) Protection of system and components from contamination
      (4) Use of lubricants on seals
   c. Operation of reassembled cylinders
      (1) Detection of internal leaks
      (2) Symptoms of a weak or broken return spring
      (3) Adjustable linkage
7. Operation of an Oleo Shock Strut
   a. Air-oil struts
   b. Spring-oil shock struts
8. Service, Repair and Troubleshoot Oleo Struts
   a. Service shock struts
      (1) Fluid servicing
      (2) Air or nitrogen servicing
      (3) Measuring shock strut extension
      (4) Identify a high pressure air valve
   b. Replace shock strut seals
      (1) Protection of seals during installation
      (2) Lubrication of seals before installation
      (3) Determination of correct replacement seal

I. AIRCRAFT LANDING GEAR SYSTEMS (Contd.)

c. Trouble shoot shock struts
(1) Binding
(2) Bottom action during taxiing
(3) Use of incorrect air valve core
(4) Strut bottoms during landing touch-down
(5) Internal leakage

9. Replace a Brake Actuating Cylinder
a. Removal of actuating cylinder
b. Inspect actuating cylinder
c. Install actuating cylinder
d. Operationally check the system

II. ICE AND RAIN CONTROL (18 hours)

A. Inspect and Check Ice and Rain Control Systems (Level - 2) (EIT-9 hrs) (T-3 hrs) (L/S-6 hrs)
1. Principles of Operation of De-icing and Anti-icing Systems
a. De-icer boot systems
(1) Pneumatic type
(2) Carbon impregnated electrical type
b. Anti-icing systems
(1) Heated air type
(2) Electrically operated type
2. Electrically Operated Air Scoop and Pitot Static System
a. Air scoop leading edge
b. Pitot static system

B. Service and Repair Ice and Rain Control Systems (Level - 2) (EIT-9 hrs) (T-3 hrs) (L/S-6 hrs)
1. Service and Repair Principles
a. De-icer boot system
(1) Pneumatic type
(2) Corbon impregnated electrical type
b. Anti-icing system
(1) Heated air type
(2) Electrically operated type
2. Service and Repair Electrically Operated Systems
a. Air intakes
b. Pitot static systems

III. QUINMESTER POST TEST

BLOCK I - AIRCRAFT LANDING GEAR SYSTEMS

A. Inspect, Check, Service, and Repair Landing Gear Retracting Systems, Shock Struts, Brakes, Wheels, Tires and Steering Systems

1. Operate, Inspect and Adjust a Retractable Landing Gear

Given:

An operational retractable landing gear, installed in an airplane or mock-up, written information or the manufacturer's service manual, an appropriate power source to permit operation of the gear, special tools and lubrication equipment as specified in the service information.

Performance:

The student will operate the retractable landing gear, inspect and adjust the landing gear to meet return-to-service standards.

Standard:

The components of the landing gear need not be airworthy; however, the adjustments outlined in the service instructions must be within return-to-service standards.

2. Inspect, Adjust and Service Nose and Tailwheel Steering and Damping Mechanisms

Given:

An airplane or mock-up incorporating an operational nose wheel steering and damper mechanism; an airplane or mock-up incorporating an operational tail wheel and shimmy damper; manufacturer's service information, tools and hydraulic fluids.

Performance:

The student will inspect, adjust and service both nose and tail wheel steering and damping mechanisms.

Standard:

Service instructions will be correctly interpreted. After servicing and adjusting, the steering and damping mechanisms will function as specified in the manufacturer's manual.

3. Check Landing Gear Alignment

Given:

An aircraft incorporating either fixed or retractable landing gear, the airplane manufacturer's service information, necessary to check landing gear alignment and the necessary measuring and alignment tools and equipment.

Performance:

The student will measure and record the caster, camber, toe-in and toe-out of the landing gear; he will judge if the landing gear alignment is within manufacturer's tolerances for return-to-flight. If the alignment is not acceptable, he will interpret the service information and recommend the method that would return the gear alignment to acceptable standards.

Standard:

Service information will be correctly interpreted and procedures for measuring gear alignment will be followed without error.

4. Bleed Air from a Hydraulic Brake System

Given:

Manufacturer's service instructions, appropriate bleeding equipment, supply of hydraulic fluids and an operable hydraulic brake system which has had air introduced into the system.

Performance:

The student will bleed the air from the brake system.

Standard:

Manufacturer's procedures will be followed without error or omission. The system, following bleeding, will be operationally ready.

5. Inspect, Service and Describe the Operation of Power Brake and Emergency Brake Systems

Given:

An operational brake system with a power brake control valve, shuttle valve, brake assembly, brake sub-system accumulator and emergency brake power system.

Performance:

The student will identify the components of the system. Using the written information, he will service and operate the system. He will describe the operation of both power and emergency brake systems.

Standard:

Correct nomenclature and terminology will be used to describe the system operation and to label the diagram. Operation and servicing of the system will be in accordance with the reference information.

6. Recognize Probable Cause of Brake Malfunction

Given:

The aircraft manufacturer's service instructions, ten written statements describing brake fading, excessive pedal travel, spongy brakes, creeping brake pedal grabbing brakes, dragging and locked brakes.

Performance:

The student will describe the probable cause of each of the malfunctions mentioned in the statements.

Standard:

The student will provide at least one probable cause of each of the malfunctions mentioned in the statements.

B. Landing Gear Components

1. Clean and Store Tires

Given:

Used aircraft tires, approved tire cleaning materials and appropriate written information describing the cleaning and storage of tires.

Performance:

The student will clean an aircraft tire, removing tar, oil, grease and other deteriorating materials and describe the procedure to be followed when storing tires or other rubber aircraft products.

Standard:

The cleaning and description of the procedure will comply with the reference material without error or omission.

2. Inspect, Demount, Determine Repairs Needed and Reinstall Tires and Wheels

Given:

Aircraft wheels with both tube and tubeless types of tire, written procedures for tire servicing and appropriate tire servicing tools and equipment.

Performance:

The student will demount one tube and one tubeless type tire from a wheel. He will inspect the wheel, tire and tube, determine necessary repairs, make one repair to a tube, reinstall the tire and tube and inflate to correct pressure. He will explain and practice safety precautions related to tire servicing.

Standard:

Written procedures will be followed without error. One completed tire installation will conform to return-to-service standards.

3. Remove, Inspect, Service and Reinstall a Wheel Assembly on the Axle

Given:

An aircraft wheel assembly mounted on an airplane or on a mock-up, written service information and wheel removal tools and equipment.

Performance:

The student will raise the aircraft and remove the wheel from the axle. He will inspect the wheel and bearings and prepare a written list of five discrepancies that are commonly found. He will describe the repairs that may be accomplished. He will lubricate the bearings of the wheel assembly, reinstall the wheel on the axle, adjust bearing play and lower the airplane.

Standard:

Service information and procedures will be followed without error or omission. Correct nomenclature will be used in descriptions and explanations. The task will be completed in a return-to-service standard.

4. Disassemble, Identify Components and Reassemble Mechanical and Hydraulic Type Brake Assemblies

Given:

Typical shoe type mechanically operated aircraft brakes; samples of hydraulically actuated brakes of the servo, expander tube, single and multiple disc types, drawings or diagrams of each type of brake, written service information that identifies the components and describe the operation of the system.

Performance:

The student will disassemble, identify the components, describe the operation and reassembly each brake assembly.

Standard:

Brake assemblies need not meet return-to-service standards. Disassembly, inspection and reassembly operations will be in complete accordance with the service information. Correct nomenclature and terminology will be used throughout the tasks.

5. Adjust Clearance of a Shoe, Multiple Disc and Single Disc Brake

Given:

A mock-up or training device that incorporates a wheel and brake assembly of the shoe, multiple disc and single disc types, replacement lining blocks, written service information or manuals and appropriate tools.

Performance:

The student will remove the wheel from the axle, inspect the brake assembly, adjust clearance of each type brake as necessary, and reinstall the wheel.

Standard:

The adjusted brakes will comply with the clearance adjustment specified in the service instructions. The procedures and work accomplished will be of return-to-service standard.

6. Inspect, Repair and Operationally Check a Master Cylinder

Given:

An operational brake master cylinder, written

service instructions and overhaul manuals, required seals, gaskets, fluids and suitable equipment to check the operation of the master cylinder.

Performance:

The student will disassemble a brake master cylinder, inspect the components, replace seals if required, reassemble and check the operation of the master cylinder.

Standard:

Procedures will be in accordance with the written information. The reassembled master cylinder will operate without evidence of internal or external leakage.

7. Describe the Operation of an Oleo Strut

Given:

Shock struts of the air-oil and spring-oil types, drawings of each type of strut and the manufacturer's service instructions, a matching type ten question examination pertaining to shock struts.

Performance:

The student will identify and label the components of each type of shock strut, explain the purpose of shock struts and describe the operation of both types of strut.

Standard:

Correct nomenclature will be used when labeling the drawings and describing the operation of the shock struts. Manufacturer's service information will be interpreted without error or omission.

8. Service, Repair and Troubleshoot Landing Gear Oleo Struts

Given:

A completely assembled and operational shock strut installed on an airplane or mock-up, the airplane manufacturer's service information, replacement high pressure air valves and seals, hydraulic fluid and necessary tools and equipment to disassemble and inflate shock struts.

Performance:

The student will deflate a shock strut, drain the fluid, remove the piston from the cylinder, install seals, reassemble the strut, service with fluid, reinstall the air valve and inflate the strut. He will identify the parts and explain the probable causes of faults usually noted in the operation of shock struts.

Standard:

Servicing and safety precautions will be followed without deviation. The shock strut, after servicing will be in return-to-service status. Troubleshooting information will be interpreted without error.

9. Replace a Brake Actuating Cylinder

Given:

An operational hydraulic brake system installed in an airplane or mock-up, a spare operational actuating brake cylinder, written service information suitable tools and a supply of hydraulic fluid.

Performance:

The student will replace the actuating cylinder in the wheel brake assembly, perform a functional test of the system following replacement of the cylinder.

Standard:

The system will operate normally. There will be no evidence of internal or external leakage.

BLOCK II - ICE AND RAIN CONTROL

A. Inspect and Check Airframe Ice and Rain Control Systems

1. Principles of Installation, Operation and Checking of De-icing and Anti-icing Systems

Given:

Manufacturer's information or equivalent publications containing illustrations, diagrams, operating and maintenance information concerning de-icing and anti-icing systems and questions of the multiple choice type.

Performance:

The student will select answers to 20 questions dealing with the operating principles, safety precautions and checking of de-icer boots, leading edge heated air anti-icing systems for airfoils and intake ducts and electrically operated anti-icing for air intake ducts and ports.

Standard:

The student will select at least 14 correct answers.

2. Inspect and Check Operation of Electrically Operated Air Scoop and Pitot Static Anti-icing Systems

Given:

Written information, schematic diagrams, an aircraft or mock-up with electrically operated anti-icer for air scoop and an air inlet port.

Performance:

The student will locate and follow appropriate procedures to remove, inspect and replace the following: an electrical air scoop leading edge anti-icing component and an electrical anti-icing element for a pitot tube or static air vent and complete a work sheet showing work accomplished.

Standard:

Service procedures followed and anti-icing components reinstalled and operative at return-to-service standards and proper safety precautions adhered to at all times.

B. Service and Repair Airframe Ice and Rain Control Systems

1. Principles of Service and Repair of De-icing and Anti-icing Systems

Given:

Manufacturer's information or equivalent publications containing illustrations, diagrams, operating and maintenance information concerning de-icing and anti-icing systems and multiple choice type questions.

Performance:

The student will select answers to twenty multiple choice questions.

Standard:

The student will select at least 14 correct answers.

2. Service and Repair Electrically Operated Air Scoop and Pitot Static Anti-icing Systems

Given:

Written information, schematic diagrams, an aircraft or mock-up with electrically operated anti-icing for an air scoop and an air inlet port.

Performance:

The student will locate and follow appropriate procedures to remove, inspect and replace the following: an electrical anti-icing component for an air scoop and an electrical anti-icing element for a pitot tube or static air vent and complete a worksheet showing work accomplished.

Standard:

Service procedures followed and anti-icing components reinstalled and operative at return-to-service standards and proper precautions adhered to at all times.

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1. Northrup Institute of Technology. Basic Science for Aerospace Vehicles. 1st ed. New York: McGraw-Hill Book Company, Inc., 1963. Pp. 320.

2. Northrup Institute of Technology. Maintenance and Repair of Aerospace Vehicles. 3rd ed. New York: McGraw-Hill Book Company, Inc., 1967. Pp. 358.

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1. Federal Aviation Administration. Federal Aviation Regulations Parts: 1, 23, 25, 27, 29, 33, 35, 37, 43, 45, 47, 65, 91 and 145. 1st ed. Washington, D.C.: U.S. Government Printing Office, 1969.

2. Federal Aviation Administration. Acceptable Methods, Techniques, and Practices-Aircraft Inspection and Repair, Advisory Circular 43.13-1. 1st ed. Washington, D.C.: U.S. Government Printing Office, 1965. Pp. 232.

Films:

1. Basic Hydraulics. 16mm. 9 min. Color. Sound. UW.

2. Brakes - Hydraulic. 16mm. 16 min. Black and White. Sound. U.S. Army Air Forces.

3. Brakes - Hydraulic. 16mm. 18 min. Black and White. Sound. U.S. Army Air Forces.

4. Brakes - Hydraulic, Inspection and Adjustment. 16mm. 10 min. Black and White. Sound. U.S. Army Air Forces.

5. De-icers - Aircraft. 16mm. 20 min. Black and White. Sound. U.S. Army Air Forces.

6. De-icers - Removal and Storage. 16mm. 10 min. Black and White. Sound. U.S. Army Air Forces.

7. Goodyear-Wheels, Tires and Brakes. 16mm. 22 min. Black and White. Sound. Goodyear Tire and Rubber Company.

8. Hydraulic System Maintenance. 16mm. 35 min. Black and White. Sound. U.S. Army Air Forces.

9. Hydraulic System Maintenance. 16mm. 16 min. Black and White. Sound. U.S. Army Air Forces.

10. Ice Formation on Aircraft. 16mm. 32 min. Black and White. Sound. Castle Films.

A P P E N D I X

Quinmester Post Test Sample

Quinmester Post Test

Name_____ Date_____ Score_____

1. The most common method of determining proper oleo (air oil) strut extension is by
    1. measuring the exposed section of strut
    2. exact measurement of the fluid in the strut
    3. measuring from the ground to some portion of the wing
    4. propeller tip clearance

2. The electrical solenoid in an aircraft anti-skid system
    1. traps pressure in the brake
    2. relieves pressure to the brakes
    3. transfers pressure to the opposite brakes
    4. shuttles brake booster, allowing less pressure to the brake

3. Bleeding of brakes is the term generally given to the
    1. removal of all fluid in the brake system
    2. replacement of high pressure air in a de-booster system
    3. withdrawing of brake fluid from the system, to remove trapped air
    4. the withdrawing of mineral base fluid and replacement of vegetable base fluid

4. One cause of a grabbing brake is
    1. air in the brake line
    2. excessive brake lining dust in the brake drum
    3. worn parking brake linkage
    4. air in the reservoir

5. The type of fluid used in a shock strut is determined by
    1. the maximum gross weight of the aircraft
    2. the type of metal used in the metering pin
    3. the material of the seals used in the struts
    4. the altitude the aircraft will reach

6. Shuttle valves installed in large aircraft braking systems allow
    1. if necessary, two independent systems to operate the same actuator
    2. the safe application of brakes regardless of ground speed due to the compensating action of the valve.
    3. fluid to bypass between the right wheel cylinder and the left wheel cylinder if braking pressures are different
    4. the compensating port, interconnecting both master cylinders to discharge fluid alternating from one to the other

7. The hydraulic system is apparently OK but the landing gear will not raise to the full 'up' position, the probable cause is
    1. low oil pressure
    2. insufficient oil
    3. improper actuating cylinder adjustment
    4. a weak packing

8. A de-booster is used to
    1. relieve pressure in the system
    2. prevent a rapid flow in reverse
    3. reduce pressure to the brakes
    4. is not used

9. How many lines from a ground unit would you connect to charge a de-booster system?
    1. One
    2. Two
    3. Three
    4. Four

10. After installing the pads in an expander tube brake, you should
    1. make sure that there is at least 1/16 inch clearance between the shoe and brake
    2. make sure you have at least the minimum permissible clearance
    3. replace the expander tube
    4. pump the brake pedal to see if the actuating cylinder causes the brake shoe to contact drum

11. The term 'Servo' in a hydraulic brake system means
    1. it is a unit that lessens the hydraulic pressures in the brake system
    2. the type of actuating cylinder in use
    3. a unit that sets the pedal travel
    4. that the rotary motion of the wheel further expands and applies the brakes

12. The location of the brake de-booster is
    1. between the power brake control valve and the brakes
    2. in the hydraulic system just ahead of the power brake control valve
    3. between the relief valve and the power brake control valve
    4. within the brake control unit since it is an integral part of the brakes and brake shoes

13. Brakes can drag for many reasons. One common reason would be
    1. low fluid in the brake reservoir
    2. worn brake shoes
    3. a broken piston return spring in the master cylinder
    4. a broken line from the reservoir to the master cylinder

14. Oleo landing struts are kept from compressing violently after initial impact by
    1. various valves and orifices that slow the fluid flow
    2. the air in the lower part of the strut
    3. the metering pin gradually increasing the restriction of the fluid
    4. the packing gland nut

15. After bleeding the brakes a mechanic finds they are still spongy. This is probably caused by
    1. extremely rigid flexible hose installed in the brake system
    2. flexible hose that has deteriorated
    3. incorrect fluid in the brake system
    4. servicing with fluid of light density

16. In checking an oleo shock strut, first thing to do is
    1. inflate the strut
    2. raise the aircraft
    3. place in up and down position on wing tip
    4. release the air

17. If you had a leaky strut you would
    1. use heavier oil
    2. tighten packing nut
    3. replace chevrons
    4. none of the above is correct

18. When an oleo strut bottoms, the cause is
    1. low air pressure
    2. high air pressure
    3. low fluid supply
    4. excessive fluid supply

19. If the packing gland nut on a strut is too tight
    1. the fluid will leak
    2. the strut piston may bind
    3. air pressure will be released
    4. the strut will collapse

20. An aircraft pitot tube is prevented from icing up by the use of
    1. a heat muff
    2. an electric heating coil
    3. turning it 90°
    4. a light coat of grease

21. Aircraft windshields may be kept free of ice by the use of
    1. a defrosting heater
    2. mechanical ice scrapers
    3. a spray of iso-propyl alcohol
    4. engine exhaust heat

22. The air inlet of turbine engines is kept free of ice by using
    1. heat from tailpipe
    2. an alcohol spray
    3. electric heaters
    4. hot compressor bleed air

23. Reciprocating engine aircraft are frequently found to have a sheet of stainless steel secured to the fuselage in the path of the propeller. Its purpose is to
    1. prevent damage from ice flying off of the propellers
    2. prevent fuselage damage from flying stones
    3. keep the propellers from throwing water against the aluminum skin
    4. prevent damage to the skin from leaning ladders against it.

24. Wing and tail surface de-icers are inflated by medium pressure air. The source of this air is
    1. a special engine driven pump
    2. an electrically driven pump in the fuselage
    3. ram air entering a special air scoop
    4. exhaust air from the vacuum pumps

25. Wing and tail surface de-icer boots should be operated
    1. continously
    2. only long enough to break off an ice formation
    3. long enough to break off an ice formation plus five full cycles
    4. only after a very heavy crust of ice has formed

KEY TO QUINMESTER POST TEST
9067.02

1.	4	9.	2	17.	3
2.	2	10.	2	18.	1
3.	3	11.	4	19.	2
4.	2	12.	1	20.	2
5.	3	13.	3	21.	3
6.	1	14.	3	22.	4
7.	3	15.	2	23.	1
8.	3	16.	4	24.	4
				25.	2